



(CASE REPORT)



Appendiceal Angiodysplasia: An Unusual Source of Lower GI Bleeding in Adolescents

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Abstract

Lower gastrointestinal (GI) bleeding in young patients is a clinical challenge, with appendiceal hemorrhage being an exceedingly rare cause. We present a 16-year-old male admitted with lower colicky abdominal pain, rectal bleeding, and a significant drop in hemoglobin levels. The diagnosis was made following a series of investigations, including colonoscopy, which revealed bleeding from the appendiceal orifice. The patient underwent an emergent laparoscopic appendectomy, with histopathology confirming angiodysplasia. This report highlights the importance of including appendiceal hemorrhage in the differential diagnosis of lower GI bleeding and discusses current diagnostic and management strategies.

Keywords: Appendiceal angiodysplasia; Lower gastrointestinal bleeding; Adolescents GI bleeding; Laparoscopic appendectomy; Appendiceal hemorrhage; Acute GI hemorrhage

1. Introduction

Vascular anomalies in the gastrointestinal (GI) tract, such as angiodysplasia or angioectasia, are common causes of GI bleeding, most frequently observed in older adults. While these lesions typically affect the colon and small intestine, appendiceal angiodysplasia is a rare and atypical manifestation, especially in younger, healthy individuals. This case of a 16-year-old male with acute lower gastrointestinal bleeding due to appendiceal angiodysplasia highlights the diagnostic challenge of obscure GI bleeding in adolescents. It emphasizes the importance of maintaining a high index of suspicion for rare vascular malformations and the role of endoscopy in timely diagnosis and management.

2. Case Presentation

A 16-year-old male, with no prior medical history, presented to the emergency room with a 2-day history of lower colicky abdominal pain, rectal bleeding, and nausea. The patient reported generalized weakness and had visited the emergency department the previous day with similar complaints, where he was discharged with treatment for hemorrhoids.

On the second presentation, the patient described passing fresh, clotted, and foul-smelling blood in his stools. He denied fever, vomiting, hematuria, or dizziness. Examination revealed stable vital signs. Laboratory tests showed a progressive decline in hemoglobin levels: from 14 g/dL initially to 11.8 g/dL and then to 9.4 g/dL over 24 hours which necessitate

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to admit the patient to ICU and 5 units of blood to be transfused. A per rectal examination by the general surgery team revealed no abnormalities such as hemorrhoids or anal fissures.

A contrast-enhanced CT scan of the abdomen showed no abnormality figure (1), (2). Upper GI endoscopy was unremarkable. Colonoscopy revealed active bleeding originating from the appendiceal orifice figure (4). The patient underwent an emergent laparoscopic appendectomy figure (3). The procedure was uneventful, and histopathology of the resected appendix confirmed angiodysplasia of the appendix as the source of bleeding figure (5). The postoperative course was smooth, and the patient was discharged in stable condition. The patient had been seen on follow-up surgical appointment one month later and reported no further attacks of rectal bleeding.

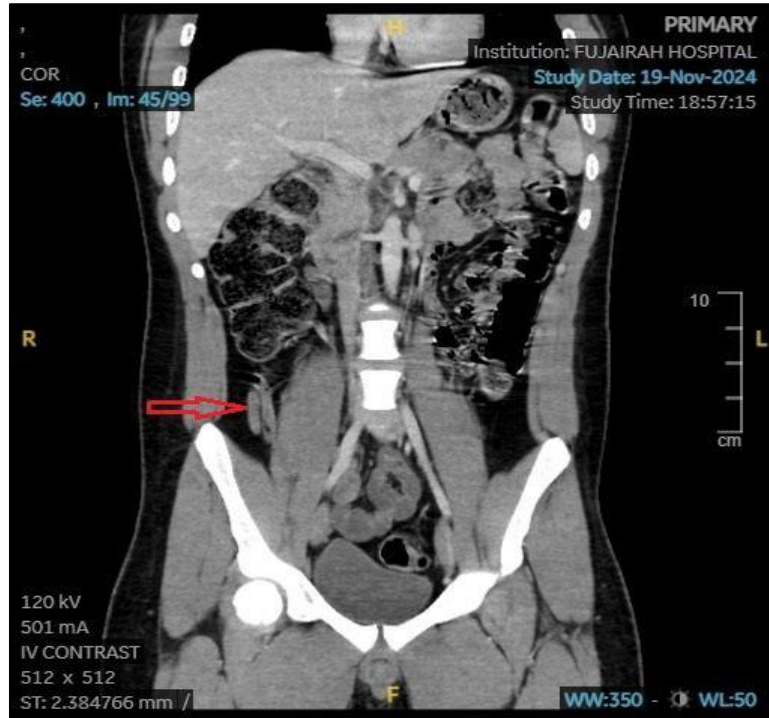


Figure 1 Coronal Contrast-Enhanced CT of the Abdomen shwoing normal appendix



Figure 2 Axial Contrast-Enhanced CT of the Abdomen shwoing normal appendix



Figure 3 The appendix measures ~7 cm, with congested serosa and prominent, dilated sub serosal vessels. Focal areas of vascular engorgement and hemorrhagic discoloration are noted, without perforation or fecalith



Figure 4 Colonoscopy revealed active bleeding originating from the appendiceal orifice

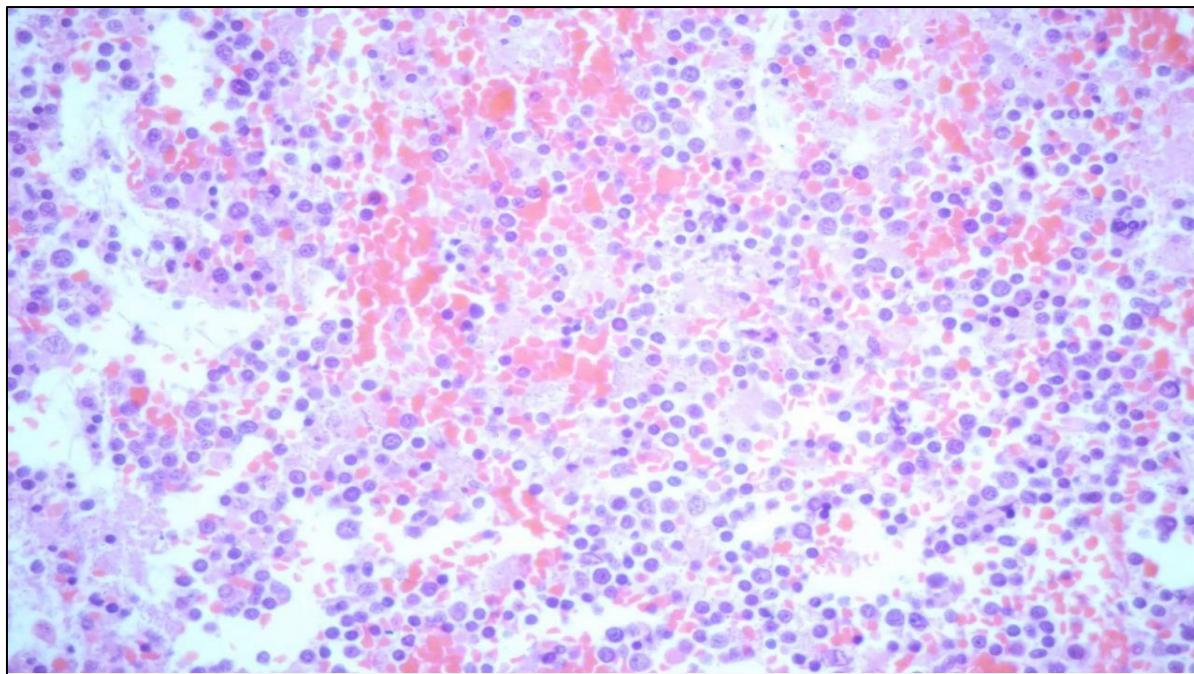


Figure 5 Histological examination of the appendix reveals multiple dilated, thin-walled vascular channels within the submucosa, some containing red blood cells. Areas of focal hemorrhage and vascular congestion are also noted. The mucosa is intact, with no significant inflammation, ulceration, or evidence of neoplasia. These features are consistent with angiodysplasia of the appendix

3. Discussion

The gastrointestinal (GI) tract is the most affected site for various vascular abnormalities that involve structural changes in arteries, veins, or capillaries. These anomalies can range from benign lesions, such as hemangiomas, to malignant ones like angiosarcomas. They may be congenital—as seen in hereditary hemorrhagic telangiectasia—or, more frequently, acquired, with angiodysplasia being a well-recognized example [4].

Angiodysplasia is now considered the leading cause of small bowel bleeding, previously referred to as obscure gastrointestinal bleeding (OGIB), particularly among individuals over the age of 60. Unlike vascular lesions linked to inherited disorders, dermatologic findings, or systemic illnesses, angiodysplasia typically arises sporadically and can affect any part of the GI tract [4].

Many individuals with angiodysplasia remain asymptomatic, and the lesions are often discovered incidentally during procedures such as screening colonoscopies. When symptoms do occur, they are usually related to gastrointestinal bleeding or its secondary effects.

Although active GI bleeding is seen in fewer than 10% of patients with angiodysplasia, the distribution of these lesions throughout the GI tract and the variability in bleeding intensity can lead to a broad spectrum of clinical manifestations. These may range from overt signs like hematemesis or hematochezia to subtle findings such as iron-deficiency anemia. Typically, the bleeding is chronic or recurrent, low in volume, and painless, reflecting its origin from the venous system.

Small bowel lesions are responsible for gastrointestinal (GI) bleeding in up to 22% of patients initially believed to have colonic angiodysplasia as the primary source. In cases involving angiodysplasia of the stomach and duodenum, multiple lesions are detected endoscopically in approximately 40% to 60% of patients. Among these, 15% to 20% may also have associated colonic lesions. Moreover, colonic angiodysplasia tends to be presented as multiple lesions rather than isolated findings. This widespread distribution and multiplicity of lesions should be carefully considered during the diagnostic and therapeutic approach to suspected angiodysplasia. Some studies have also suggested a potential link between true colonic diverticula and angiodysplastic changes, which warrants consideration in clinical evaluation [10].

Angiodysplasia, also referred to as angioectasia, is histologically characterized by dilated, thin-walled blood vessels located within the mucosal and submucosal layers of the gastrointestinal tract [1]. Clinically, it often manifests as upper

GI bleeding and may resemble the presentation of gastric varices [2]. Although the precise mechanisms underlying its development are not fully understood, factors such as the influence of vascular endothelial growth factor and age-related submucosal degeneration have been implicated [3].

Diagnosing angiodysplasia on histopathological examination can be challenging. In freshly excised specimens, the lesions may appear only as faint vascular markings or areas of subtle erythema, which can be easily overlooked or absent altogether. After formalin fixation, these surface features often become indistinct. When present, histologic analysis typically reveals clusters of dilated, tortuous veins and venules within the submucosa, sometimes accompanied by enlarged capillaries in the overlying mucosa [9].

The diagnosis and management of angiodysplasia can be particularly challenging, largely due to the difficulty in pinpointing the exact source of bleeding and stabilizing the patient's hemodynamic status. These complexities often necessitate a coordinated, multidisciplinary approach. Although endoscopy frequently serves as both a diagnostic and therapeutic tool, supplementary imaging techniques—such as computed tomography (CT) angiography—may be essential in certain cases. The literature reflects a wide range of clinical presentations and successful interventions, including endovascular embolization and surgical resection [3].

Angiodysplasia is typically seen in older adults, with the colon and small intestine being the most commonly affected sites [4]. By contrast, this case involves a 16-year-old male with no significant past medical history, who presented with acute lower gastrointestinal bleeding due to a highly unusual finding: angiodysplasia of the appendix. This case underscores several notable differences in clinical presentation, diagnostic pathways, and treatment approaches compared with previously reported cases.

For example, Nakagawa et al. described a 52-year-old woman who presented with recurrent melena and anemia. Imaging with contrast-enhanced CT and double-balloon endoscopy identified a bleeding lesion in the jejunum, which was managed through selective preoperative arterial embolization followed by laparoscopic resection of the affected bowel segment [5]. In another case, Nakatani et al. reported on a 66-year-old man with tarry stools and profound anemia, in whom capsule endoscopy—performed during active bleeding—identified a small bowel angioectasia. The lesion was treated using argon plasma coagulation (APC) delivered via balloon-assisted enteroscopy, with no recurrence observed during long-term follow-up [6].

In contrast to these cases, our patient was considerably younger and presented with fresh rectal bleeding, associated nausea, and a rapid drop in hemoglobin levels, requiring admission to the intensive care unit and multiple blood transfusions. Initial imaging and upper endoscopy failed to identify the bleeding source. However, colonoscopy performed during active bleeding successfully localized the hemorrhage to the appendiceal orifice. This led to an urgent laparoscopic appendectomy, and histopathologic examination of the resected specimen confirmed the diagnosis of appendiceal angiodysplasia. The patient's postoperative recovery was uneventful.

This case stands out not only due to the patient's age but also because of the unusual anatomical location of the lesion. Whereas previously reported cases involved deep small bowel lesions requiring advanced diagnostic techniques, in our case, timely colonoscopy during active bleeding enabled diagnosis. Moreover, confirmation was achieved via histopathological analysis of the resected appendix rather than by endoscopic appearance alone.

Appendiceal bleeding is an extremely rare cause of gastrointestinal (GI) hemorrhage, accounting for approximately 0.014% of all reported cases [7]. Several diagnostic tools can aid in identifying the source, including barium enema, colonoscopy, mesenteric angiography, and abdominal computed tomography (CT). In the present case, colonoscopy successfully localized the bleeding to the appendiceal orifice, highlighting its significant role in the evaluation of both lower GI and appendiceal bleeding sources.

While colonic angiodysplasia is often amenable to endoscopic treatment, lesions located in the appendix are generally not accessible or treatable via colonoscopy. In this context, angiography serves as a valuable adjunct to endoscopy by identifying additional angiodysplastic lesions elsewhere in the GI tract—present in up to 17% of patients with colonic involvement. It's important to note that mesenteric angiography requires a minimum bleeding rate of approximately 0.5 mL/min for detection; however, once a bleeding site is identified, embolization can be carried out as a therapeutic measure without delay.

Various treatment options exist for managing appendiceal bleeding. When diagnosed through mesenteric angiography, selective arterial embolization is a feasible and effective approach. Surgical management—ranging from simple appendectomy to more extensive procedures such as partial cecectomy, ileocecectomy, or right hemicolectomy—

should be guided by the anatomical location of the lesion, the extent of bleeding, and any coexisting medical conditions [8].

4. Conclusion

This case highlights a rare but clinically significant presentation of lower gastrointestinal bleeding due to appendiceal angiodysplasia in a young, previously healthy patient. Unlike the typical demographic affected by angiodysplasia—older adults with chronic or occult bleeding—this patient presented with acute, active hemorrhage requiring intensive care and transfusion support. The diagnosis was successfully made via colonoscopy during active bleeding, emphasizing the value of timely endoscopic evaluation in unclear GI bleeding scenarios. Definitive management through emergent laparoscopic appendectomy led to a full recovery, confirmed by histopathology and uneventful follow-up. This case underscores the importance of maintaining a high index of suspicion for atypical bleeding sources in young patients and reinforces the critical role of multidisciplinary coordination in the prompt diagnosis and treatment of obscure gastrointestinal bleeding.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

References

- [1] Johnson AM, Chovwen PE, Akpan EJ, Patel A. Aortic valve stenosis, a precipitating factor of recurrent bleed in colonic angiodysplasia: a literature review. *Cureus*. 2021 Jun 24;13(6):e15903. doi:10.7759/cureus.15903. PMID: 34322347; PMCID: PMC8310456.
- [2] Chataut D, Katwal S, Suwal S, Thapa A, Bhattarai B. Angiodysplasia simulating variceal bleeding: a challenging case report of diagnosis and intervention. *Ann Med Surg (Lond)*. 2024 Mar 19;86(5):3109–3112. doi:10.1097/MS9.0000000000001963. PMID: 38694381; PMCID: PMC11060247.
- [3] Dabora AA, Nogoud A, Abdulsakhi M, Rafei A, Khalifa HA. Jejunal angiodysplasia: surgery can be life-saving – a case report. *Ann Med Surg (Lond)*. 2024 Feb 28;86(4):2204–2207. doi:10.1097/MS9.0000000000001799. PMID: 38576924; PMCID: PMC10990319.
- [4] Aghighi M, Taherian M, Sharma A. Angiodysplasia. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan– [updated 2023 Aug 14; cited 2025 Jun 22]. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK537300/>
- [5] Hara H, Ozawa S, Nabeshima K, Koizumi J. Successful laparoscopic surgery combined with selective arterial embolization for bleeding due to jejunal angiodysplasia: a case report. *BMC Surg*. 2020;20:262. doi:10.1186/s12893-020-00909-6. Available from: <https://bmcsurg.biomedcentral.com/articles/10.1186/s12893-020-00909-6>
- [6] Arai Y, Ogawa M, Arimoto R, Ando Y, Endo D, Nakada T, et al. Contribution of capsule endoscopy early in a bleeding episode to treatment of small bowel angioectasia: a case report. *Medicina (Kaunas)*. 2021 Mar 31;57(4):321. doi:10.3390/medicina57040321. Available from: <https://www.mdpi.com/1010-660X/57/4/321>
- [7] Xing XC, Yang JL, Xiao X. Clinical features, treatments and prognosis of appendiceal bleeding: a case series study. *BMC Gastroenterol*. 2023 Nov 3;23(1):377. doi:10.1186/s12876-023-03025-6. PMID: 37924017; PMCID: PMC10625278.
- [8] Choi JM, Lee SH, Lee SH, Ahn BK, Baek SU. Hematochezia due to angiodysplasia of the appendix. *Ann Coloproctol*. 2016 Jun;32(3):117–119. doi:10.3393/ac.2016.32.3.117. PMID: 27437394; PMCID: PMC4942527.
- [9] Raju G, Gopal DV. Angiodysplasia. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan– [cited 2025 Jun 21]. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK549777/>
- [10] Al-Hamid H, Gamarra RM. Angiodysplasia of the colon [Internet]. *Medscape*; 2025 [cited 2025 Jun 22]. Available from: <https://emedicine.medscape.com/article/170719-overview>